

RUDBECKIA AURICULATA (PERDUE) KRAL,
A SPECIES DISTINCT FROM R. FULGIDA AIT.

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During field work toward a flora of Alabama I have come across several additional populations of a very tall, smoothish, rhizomatous *Rudbeckia*, which was originally described by Perdue (1961) from a single population in Covington County as var. *auriculata* of *R. fulgida* Ait. Admittedly, *R. fulgida* is extremely variable, presenting a broad spectrum of radiate extremes (Perdue treats seven in his 1957 treatment of the complex) over a broad range of habitats and geography. However, this particular *Rudbeckia* varies from the other "fulgidas" so much, and so consistently, that to treat it as another variety of *R. fulgida* would be inconsistent with species concepts in *Rudbeckia*. Perhaps I can best demonstrate this situation by offering descriptions of *R. fulgida* and *R. auriculata* (*R. fulgida* var. *auriculata* Perdue), these based on 45 samples of the former and ten of the latter. The description of *R. fulgida* is broadened to include the three varieties now known to occur within Alabama and Tennessee, which are possibly sympatric with *R. auriculata*.

R. fulgida Ait. var. *fulgida*. Plate 1 (2) ; Plate 2 (3).

R. fulgida Ait., Hort. Kew. 3: 251. 1789.

R. chrysomela Michx. Fl. Bor. Am. 2: 143. 1803.

R. truncata Small, Bull. Torr. Bot. Club 25: 478. 1898.

R. acuminata Boynt. & Beadle, Fl. S.E.U.S. ed. 1. 1256. 1903.

R. foliosa Boynt. & Beadle, Fl. S.E.U.S. ed. 1. 1256. 1903.

R. tenax Boynt. & Beadle, Fl. S.E.U.S. ed. 1. 1257. 1903.

Stoloniferous-rhizomatous perennials to 1.3 m. tall, perennating by one or more slender, stoloniferous offshoots, these later thickening and becoming rhizomatous. Rosette leaves

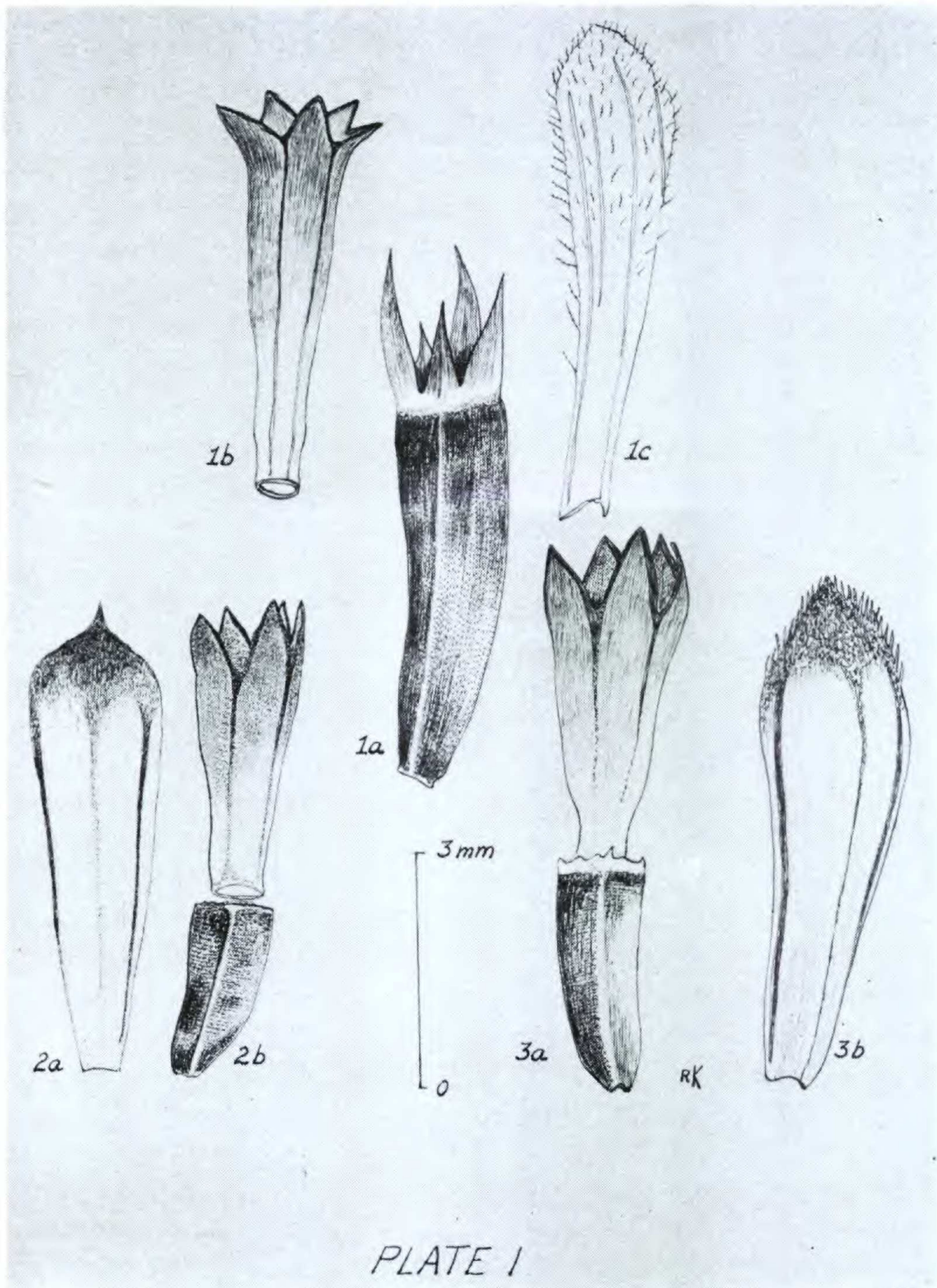


PLATE 1. Pales, akenes and corollas of *Rudbeckia*.

1. *Rudbeckia auriculata*. 1a. akene; 1b. disc corolla; 1c. pale, outer surface. Drawn from *Kral 48579*.

2. *Rudbeckia fulgida* var. *fulgida*. 2a. pale, outer surface; 2b. akene and disc corolla. Drawn from *Kral 33107*.

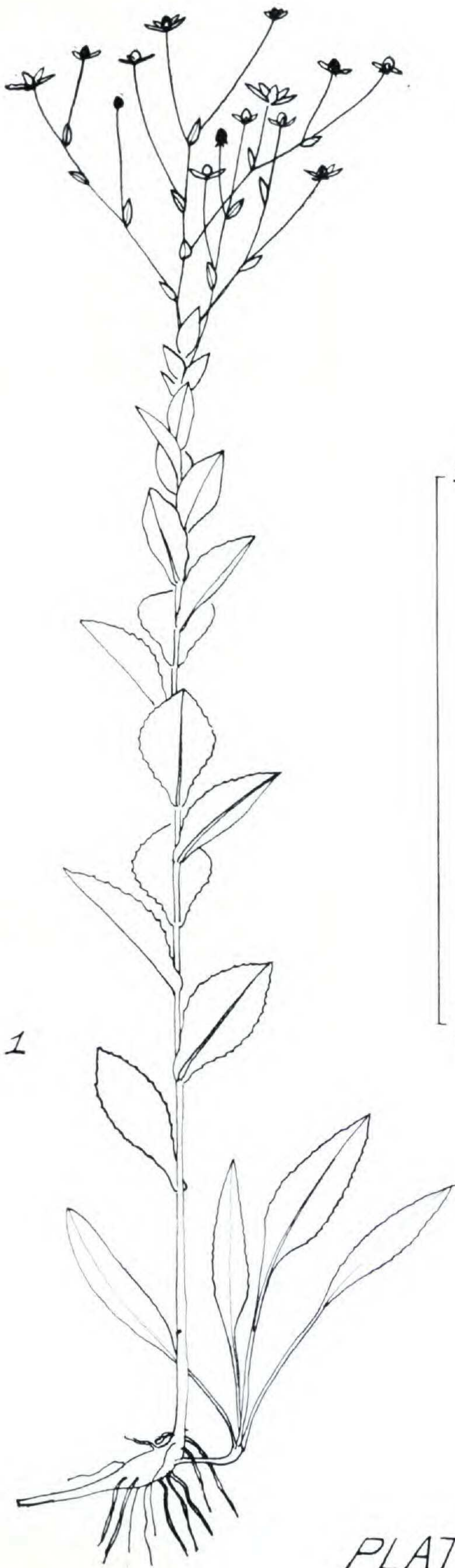
3. *Rudbeckia fulgida* var. *umbrosa*. 3a. akene and disc corolla; 3b. pale, outer surface. Drawn from *Kral 32945*.

with blades ovate to lanceolate or elliptic, altogether 3-11 (-25) cm. long, on petioles shorter than to as long as the blades, the margins ranging from entire to undulate, crenate, dentate, or serrate, the bases cuneate to attenuate, the surfaces glabrous to (usually) appressed-strigose. Stems erect, proximally hirsute or strigose or smooth, distally strigose, strigillose or smooth, and terete or sulcate-costate. Heads few to many, long pedunculate usually from the axils of upper stem leaves and forming an open "candelabra-like" cyme. Lower stem leaves similar in outline and indumentum to rosette leaves, grading upward to shorter, narrower, sessile or even clasping. Phyllaries oblong, slightly to much shorter than the rays, green, ciliolate-scabrid, reflexed. Rays short-oblong to elliptic, 0.9-1.7 cm. long, spreading or slightly recurved, often strigillose on the backs, orange-yellow (frequently drying greenish). Disc 1.0-1.8 cm. broad, the pales oblanceolate or cuneate, rarely elliptical, 4-5 mm. long, short-acuminate to acute or obtuse, the margins entire to sparsely ciliolate, the outer surfaces distally a deep reddish-brown becoming proximally tan with the 3 nerves, particularly the 2 submarginal laterals a deep lustrous reddish-brown, smooth or sparsely strigillose especially toward the tips. Disc corollas 3.0-3.5 mm. long, the tube shorter than the narrowly campanulate or broadly tubular throat, the lobes short-triangular and erect, the whole corolla deep purple-brown. Akenes asymmetrically short-oblong, 2.0-2.5 mm. long, curvate proximally, usually 4-angled, dark gray, the pappus a low, slightly uneven crown less than 0.5 mm. long or almost obsolete.

This entity inhabits prairies, swales, open woods, fields, and roadsides, on a variety of soils and in dry to quite wet situations from New Jersey to Illinois, south to Florida and Louisiana. It is definitely the most widespread, certainly

PLATE 2. Habit sketches of *Rudbeckia*.

1. *Rudbeckia auriculata*.
2. *Rudbeckia fulgida* var. *umbrosa*.
3. *Rudbeckia fulgida* var. *fulgida*.



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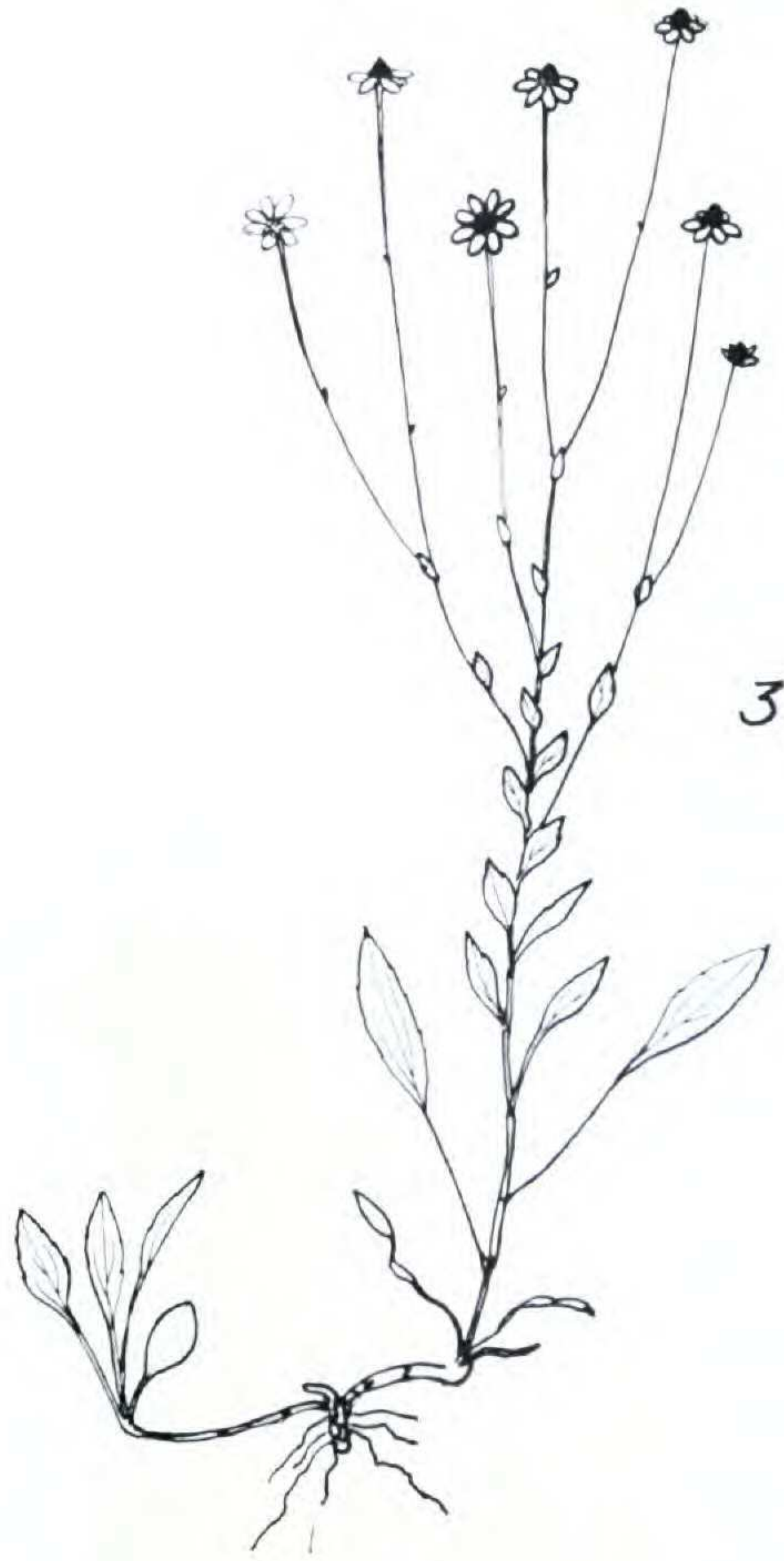


PLATE 2

the most variable taxon of the complex. It and the other varieties of *R. fulgida* all display a fine orange-yellow ligule color that distinguishes them well from other *Rudbeckias* in the late summer and early autumn fields.

R. fulgia Ait. var. *umbrosa* (Boynt. & Beadle) Cronq.,
Rhodora 47: 400. 1945. Plate 1(3); Plate 2(2).

R. umbrosa Boynt. & Beadle, *Biltmore Bot. Stud.* 1: 16.
1901.

R. chapmanii Boynt. & Beadle, *Biltmore Bot. Stud.* 1: 14.
1901.

Differs from var. *fulgida* in being stouter, the stem often angular, usually smoother, taller (frequently 1 m. tall), with stouter rhizomes. Rosette and lower stem leaves proportionately large, long-petiolate with ovate or lance-ovate, cordate-based blades, these either glabrous or strigose or scabrid, and with entire to crenate-dentate margins. Heads larger, the rays longer, usually elliptic-oblong, and often fully 3 cm. long, the disc often to 2 cm. broad. Pales consistently ciliate distally save for most inner ones. Akenes similar in shape but usually longer, to 3 mm.

This variety is perhaps the showiest of the Alabama-Tennessee *fulgidas*, in my opinion an excellent horticultural subject because of its late and long-blooming habit and its full inflorescence. Its best habitats are sunny, moist to quite wet swales and seeps from Virginia west to Ohio and south to Alabama and Georgia.

R. fulgida Ait. var. *spathulata* (Michx.) Perdue, *Rhodora*
59: 297-298. 1957.

R. spathulata Michx. *Fl. Bor. Am.* 2: 144. 1803.

Most similar to var. *fulgida*, with rosette and basal stem leaves attenuated to the petiole, not cordate. Stems ranging from glabrous to variously hirsute or strigose; mid- and upper stem leaves ranging from broadly spatulate to oblanceolate or pandurate, and from glabrous to strigose. Heads as small as in var. *fulgida* with rays short (rarely as long as 2 cm.).

This variety grows in low, moist to wet, sunny places or in low open woods from Virginia west to Tennessee and south to Florida and Alabama. In habit, rosette and stem leaves, inflorescence, and head it is so similar to extremes of *R. fulgida* var. *fulgida* as to be indistinguishable, and its status as a variety to me appears hardly tenable.

R. auriculata (Perdue) Kral, stat. nov. Plate 1(1); Plate 2(1).

R. fulgida Ait. var. *auriculata* Perdue, *Rhodora* 63: 119-120. 1961.

Robust, rhizomatous, glabrous or subglabrous perennial to 3 m. tall, perennating by short, stoloniferous offshoots, these becoming stout (to 1 cm. or more thick) by the second season. Rosette and lower stem leaves to 65 cm. long, the blades oblong to oblanceolate or ovate-lanceolate, short-acuminate to rounded or acute, entire to sinuate, crenate, dentate, coarsely serrate or denticulate, on petioles from 1/3-1/2 the total leaf length, the surfaces smooth to scabrous and usually strigose on the veins, midrib and petiole. Stems erect, stiffish, proximally fully 1 cm. thick, subterete, multicostate to sulcate. Middle and upper cauline leaves sessile, the blades progressively reduced up the stem, elliptical to ovate or pandurate, acute, the margins entire to dentate, denticulate or coarsely serrate, the bases auriculate-clasping, the surfaces from smooth to sparsely scabrid or strumose. Heads many in an open, broadly convex, paniculate cyme. Phyllaries oblong-linear, spreading, shorter than rays, smooth save for scaberulous margins. Pales oblong-cuneate, ca. 6 mm. long, acute, ciliate, the backs hirsutulous, proximally tan with maroon mid- and sub-marginal nerves, distally a deep reddish-brown. Rays bright yellow, oblong-linear, ca. 2 cm. long, spreading or spreading-ascending, the backs frequently strigillose. Disc 1.0-1.7 cm. broad, the corollas purple-brown, 3.0-3.5 mm. long, the short tube gradually expanding into the narrowly funnelform throat, the lobes short-triangular, erect. Akenes oblong-curved, 4.0-4.5 mm. long, a rich, lustrous reddish-

brown, 4 ribbed, the pappus prominently unevenly 4-6-toothed, the teeth pale tan, chartaceous, narrowly triangular, the longer ones fully 2 mm. long.

TYPE: Alabama: COVINGTON CO.: moist soil along Alabama Highway 55, 11 mi. south of McKenzie (2 mi. n. of Red Level), 24 July 1958, *R. E. Perdue* 2177. Holotype at GH, Isotype at US.

Rudbeckia auriculata inhabits bogs, swamps, seeps, ditches and swales, mostly in full sun, sometimes in partial shade at edges of swamp woodlands. So far, most of the samples are from the lower Coastal Plain in Alabama, but I have found one outlier in the Appalachians, northeast of Birmingham in St. Clair County in the broad limestone valley between Oak Mountain and Blount Mountain. Oddly enough, one of its neighbors there is *Leavenworthia exigua* var. *lutea*, which appears in patches in spring on low outcrops of calcareous rock. Because Alabama is even now rather poorly studied for its flora, other populations connecting the montane ones with the Coastal Plain ones will probably be discovered. The plants are so tall (some reaching 3 m. in height!) as to be conspicuous even at a distance, the only other *Rudbeckia* of comparable height in the area being *R. laciniata*.

Rudbeckia auriculata, to summarize, differs from *R. fulgida* in the following ways:

1. The plants are usually at least twice as tall, arising from much stouter rhizomes, and are prevalently smooth-stemmed.

2. The foliage is, overall, larger, with cauline leaves prevalently panduriform, auriculate-clasping; this character is stressed by Perdue (l.c.) in his varietal distinction. The phyllaries are hairy on the backs with spreading or ascending hairs.

3. The rays are a bright yellow, not an orange-yellow as in the fulgidas of the southeastern U.S. It is to be suspected that their pigment chemistry is quite different.

4. The disc corollas are shorter than the akenes. In *Rudbeckia fulgida* the reverse is true, *i.e.*, the akenes are shorter than the disc corollas.

5. The akenes are narrower in outline and longer than are those of *Rudbeckia fulgida*, and are a lustrous red-brown rather than gray-tinted.

6. The pappus is prominent, produced upward into narrowly triangular scales, these longer than is true for any other southeastern *Rudbeckia*. In *R. fulgida* the pappus is usually a low, uneven crown or is nearly absent.

Thus, when one considers the many striking character differences, this is not only a species distinct from *Rudbeckia fulgida*, but indeed might well comprise a part of another section of the genus. Only a revisional attempt would disclose this fact, but the taxa nearest to *R. auriculata* in pappus character and in some respects of head characteristics are, in southeastern U.S., *R. nitida* and *R. mohrii*.

A cytological comparison of some southeastern Rudbeckias is to be initiated during the summer of 1974, for there is sufficient phenotypic difference to assume a considerable chromosomal difference, at least from *R. fulgida* and its varieties.

The following are some recently collected localities for populations of *Rudbeckia auriculata*:

Alabama: BARBOUR CO.: swampy ditch beside low oak forest, Lugo, 12 Sept. 1968, *R. Kral* with *K. E. Blum* 33300. COVINGTON CO.: tall plants of peaty swale by Ala. 55, just n. of Red Level, 30 Aug. 1970, *Kral* 40841; sandy silt of creek bottoms by Ala. 54, 7.8 mi. n.e. Flerala, plants to 8' tall, 24 Jul. 1968, *Kral* 31970. CRENSHAW CO.: n. side Luvergne, sandy creek bottom by U.S. 231, plants to 3 m., 16 Aug. 1968, *Kral* 32421. GENEVA CO.: sandy peat of longleaf pine-land ditch due e. of Samson, just outside limits by Ala. 52, 3 Sept. 1969, *Kral* 36837; 5 mi. s. of Samson along Ala. 187, moist ditch, grown up waste area, roadsides, 18 Aug. 1970, *H. D. Moore* 640. PIKE CO.: sandy shores of Pike Co. public lake, s. of Troy, 11 Sept. 1968, *Kral* 33174. ST. CLAIR CO.: ca. 4 mi. n. Leeds, abundant clone in wet cleared area of pasture, 27 Sept. 1972, *Kral* 48579.

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